Abstract of the Disclosure

High purity refractory metals, valve metals, refractory metal oxides, valve metal oxides, or alloys thereof suitable for a variety of electrical, optical and mill product/fabricated parts usages are produced from their respective oxides by metalothermic reduction of a solid or liquid form of such oxide using a reducing agent that establishes (after ignition) a highly exothermic reaction, the reaction preferably taking place in a continuously or step-wise moving oxide such as gravity fall with metal retrievable at the bottom and an oxide of the reducing agent being removable as a gas or in other convenient form and unreacted reducing agent derivatives being removable by leaching or like process.